“Pseudo-Geyser Sign” as the First Presentation of Septic Arthritis of the Shoulder

“Pseudo-Geyser Sign” como Primeira Apresentação de Artrite Sética do Ombro

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ABSTRACT
Massive rotator cuff tears can lead to large cysts, extending from the subacromial space through the acromioclavicular joint into a subcutaneous cyst, with a typical “geyser sign” on magnetic resonance imaging (MRI). To our knowledge, no cases of transdeltoid pseudo-cyst as first manifestation of septic arthritis have ever been reported. A 79-year-old female presented to the Emergency Department (ED) with a two-day evolution of a painful tumefaction over her right shoulder. She had been admitted to the ED 16 days before, after being bitten by a dog. Tumefaction drainage revealed a total cell count of 50 320 cells/mL. MRI revealed glenohumeral joint cavity’s fluid “decompression” through the deltoid. Septic arthritis was presumed as the cause of the pseudo-cyst, configuring a “pseudo-geyser sign” on MRI. Septic arthritis is an orthopedic emergency, whose early diagnosis, ED referral and treatment are crucial.

KEYWORDS: Arthritis, Infectious; Rotator Cuff; Shoulder Joint

RESUMO
Ruturas maciças da coifa dos rotadores podem levar à formação de grandes quistos, que se estendem do espaço sub-bacromial, através da articulação acromioclavicular, formando um quisto subcutâneo, com um “geyser sign” típico na ressonância magnética (RM).
Até onde sabemos, nenhum caso de pseudo-quisto transdeltoide como primeira manifestação de artrite séptica foi relatado. Uma mulher de 79 anos recorreu ao Serviço de Urgência (SU) com uma tumefação dolorosa no ombro direito com dois dias de evolução. Ela tinha recorrido ao SU 16 dias antes, após ter sido mordida por um cão. A drenagem de tumefação revelou uma contagem total de células de 50 320 células/mL. A RM revelou “decompressão” do fluido da cavidade articular glenoumeral através do deltoide. A artrite séptica foi presumida como a causa do pseudoquisto, configurando um “pseudo-geyser sign” na RM.
A artrite séptica é uma emergência ortopédica, cujo diagnóstico precoce, encaminhamento ao SU e tratamento são cruciais.

PALAVRAS-CHAVE: Artrite Infecciosa; Articulação do Ombro; Coifa dos Rotadores
INTRODUCTION
Several case reports have previously shown that massive rotator cuff tears can lead to large cysts extending from the subacromial space through the acromioclavicular joint into a subcutaneous cyst, with a characteristic “geyser sign” on imaging.1-6 One single and recent study has reported extension through the deltoid muscle.7 However, to our knowledge, no cases of transdeltoid pseudo-cyst as the first manifestation of septic arthritis have ever been reported.

CASE REPORT
A 79-year-old female, with a clinical history of arterial hypertension and dyslipidemia, under telmisartan + hydrochlorothiazide, 80 + 25 mg, and simvastatin, 20 mg, both once daily, presented to the Emergency Department (ED) with a two-day evolution of a painful tumefaction over her right shoulder (Fig. 1). She denied any history of recent trauma. During the physical examination, she showed limited passive and active range of motion. A mass could be palpated in the lateral side of her right shoulder, measuring about 5 cm, associated with local heat, redness, swelling and pain. The redness was extended to the armpit area and multiple adenopathies could be palpated in the axillary region, with 2 to 3 cm. The tympanic temperature was 37.5°C. The medical records showed the patient had been admitted to the hospital 16 days before, after being bitten by a neighbor’s dog on her left leg; objective examination was then normal, and she was discharged medicated with oral antibiotic therapy (amoxicillin + clavulanic acid, 875 + 125 mg, every 12 hours, for 8 days) and appropriate wound dressings’ advice. Right shoulder ultrasound on admission was notable for a voluminous and heterogeneous, yet inconclusive, subcutaneous fluid collection. Puncture and drainage of the lesion were performed, resulting in 10 mL of a pasty serohematic fluid; cytological examination revealed a total cell count of 50 320 cells/mL, with a predominance of polymorphonuclear leukocytes (92.7%). Blood tests were notable for an increase in C-reactive protein levels (34.3 mg/dL). Magnetic resonance imaging (MRI) of the right shoulder was performed, which revealed massive rupture of the rotator cuff tendons involving the entire supraspinatus and infraspinatus and the upper segment of the subscapularis muscle. Also, it was notable for blurring of the tendon of the long portion of the biceps and moderate effusion in the glenohumeral and acromioclavicular joint cavities, with fluid leakage into the subacromial/ subdeltoid bursa. The glenohumeral joint cavity demonstrated “de-
CONCLUSION

Septic arthritis, also known as infectious arthritis, represents a direct invasion of a joint space by various microorganisms, mainly bacteria, and the most common route of invasion of the joint is via the bloodstream. The MRI scan revealed a fluid-filled cyst extending from the subacromial space through the deltoid in the context of a long-standing massive rotator cuff tear, configuring a “pseudo-geyser sign” on imaging. Its growth and exuberant inflammatory signs were thought to be the result of an episode of septic arthritis in the context of apparent hematogenous spread due to the previous dog bite incident. Prior antibiotic exposure can justify not only the negative blood and synovial fluid cultures, but also the self-limited course of the disease. Though uncommon, septic arthritis is an orthopedic emergency that can cause significant joint damage, leading to increased morbidity and mortality. Clinicians should be aware of the signs and symptoms of septic arthritis, owing to the fact that the early diagnosis, prompt referral to the ED and treatment are crucial.

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